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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/784,226	02/24/2004	Masanori Takeuchi	110184.01	8354
25944	7590	06/30/2006	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			NORRIS, JEREMY C	
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Please find below and/or attached an Office communication concerning this application or proceeding.

JK

<b>Office Action Summary</b>	<b>Application No.</b> 10/784,226	<b>Applicant(s)</b> TAKEUCHI, MASANORI	
	<b>Examiner</b> Jeremy C. Norris	<b>Art Unit</b> 2841	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 April 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5 and 7-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 9/912492.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 9 depends from claim 6, which is now cancelled. Thus the meets and bounds of the claim cannot be properly determined. As such, an art rejection has not been applied. However, if claim 9 had consisted of the limitations of now cancelled claim 6, an art rejection of claim 9 would have proper in light of the combined teachings of US 5,723,822 (Lien) and US 4,816,323 (Inoue) since Lien discloses a flexible wiring board having: a first resin film (208); a first wiring film (216), a lower part (224, 225, 226) of which is embedded into the first resin film; and a second wiring film (217), a bottom face of which is in contact with a surface of the first resin film a bottom face of the lower part of the first wiring film embedding into the first resin film is in contact with the first resin film, and an electric current flows through the first and second wiring films along with a direction in which the first and second wiring films extend (although not explicitly stated, it is inherent that such a current exists, or the device would be incapable of signal transmission and would thus be inoperable) [claim 1], ,but does not specifically state that at least one third opening is formed in a part of the second resin film where the second wiring film is disposed [claim 6]. However, it is well known in the art to make openings in resin layers over wiring films as evidenced by

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Inoue (figure 1 evidences an opening 27 in a resin layer over a wiring film 24).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to form a second opening in the second resin film above the second wiring film of the invention of Lien as is known in the art and evidenced by Inoue. The motivation for doing so would have been to allow for electrical connection to the wiring.

Additionally, while the modified invention of Lien does not specifically disclose a metal bump located in at least one of the second openings [claim 9], Inoue teaches a metal bump located in the openings above the wiring films. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to position a metal bump in at least one of the second openings of the modified invention of Lien. The motivation for doing so would have been to effect an electrical connection.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 10, 16, and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6,184,476 B1 (Okabe).

Okabe discloses, referring primarily to figure 1 a flexible wiring board having: a first resin film (33); a first wiring film (40), a lower part of which is embedded into the first resin film; a second wiring film (44), a bottom face of which is in contact with a surface of the first resin film; a bottom face of the lower part of the first wiring film embedding into the first resin film is in contact with the first resin film, and an electric current flows through the first and second wiring films along with a direction in which the first and second wiring films extend (although not explicitly stated, it is inherent that such a current exists, or the device would be incapable of signal transmission and would thus be inoperable) [claim 1], wherein a surface of the first wiring film is flush with a surface of the second wiring film (figure 3d; col. 4, lines 20-45 and 50-60) [claim 2], wherein the first resin film has a flat surface at an opposite side to where the first and second wiring film are disposed (figures 3d, e) [claim 10], wherein the first wiring film extends a greater amount in a thickness direction than the second wiring film, the thickness direction being a direction that is perpendicular to or substantially perpendicular to a plane along which the surface of the first resin film extends (col. 4, lines 60-68) [claim 16], wherein the first wiring film includes a second surface that is substantially opposite to the surface of the first wiring film that is flush with the surface of the second wiring film, the second wiring film includes a second surface that is substantially opposite to the surface of the second wiring film that is flush with the surface of the first wiring film, the second surface of the first wiring film extends substantially along a first plane the second surface of the second wiring film extends substantially along a second plane, and the first plane is different from the second plane (figures 3d,e) [claim 17].

Claims 1, 3, 4, 7, 11 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,723,822 (Lien).

Lien discloses, referring primarily to figures 3 & 4, a flexible wiring board having: a first resin film (208); a first wiring film (216), a lower part (224, 225, 226) of which is embedded into the first resin film; and a second wiring film (217), a bottom face of which is in contact with a surface of the first resin film a bottom face of the lower part of the first wiring film embedding into the first resin film is in contact with the first resin film, and an electric current flows through the first and second wiring films along with a direction in which the first and second wiring films extend (although not explicitly stated, it is inherent that such a current exists, or the device would be incapable of signal transmission and would thus be inoperable) [claim 1], wherein a second resin film (209) is formed on the surfaces of the first and second wiring films [claim 3], wherein at least one first opening is formed in the part of the second resin film where the first wiring film is disposed [claim 4], wherein a metal bump (213) is located in at least one of the first openings [claim 7].

Additionally, Lien discloses, the intermediate product of a flexible wiring board having a first resin film (208), and a metal foil (212) wherein the metal foil has a thin film part (217) and a thick film part (216) connecting to the thin film part, the thick film part has a larger thickness than a thickness of the thin film part and is connected to the thin film part, a surface of the metal foil is flush, a part of a bottom face of the metal foil (224, 225, 226), where the thick film part is disposed, is embedded into the first resin film, a

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part of the bottom face of the metal foil, where the thin film part is disposed, is in contact with a surface of the first resin film, the first resin film has a flat surface in an opposite side to where the metal foil is disposed, and the bottom face of the thick part is in contact with the first resin film [claim 11], wherein the surface of the metal foil that is flush extends along the thick film part and the thin film part, and is opposite to the bottom face of the metal foil [claim 18].

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lien in view of US 4,816,323 (Inoue).

Lien discloses the claimed invention as described above except Lien does not specifically state that at least one second opening is formed in a part of the second

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resin film where the second wiring film is disposed [claim 5]. However, it is well known in the art to make openings in resin layers over wiring films as evidenced by Inoue (figure 1 evidences an opening 27 in a resin layer over a wiring film 24). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to form a second opening in the second resin film above the second wiring film of the invention of Lien as is known in the art and evidenced by Inoue. The motivation for doing so would have been to allow for electrical connection to the wiring.

Additionally, while the modified invention of Lien does not specifically disclose a metal bump located in at least one of the second openings [claim 8], Inoue teaches a metal bump located in the openings above the wiring films. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to position a metal bump in at least one of the second openings of the modified invention of Lien. The motivation for doing so would have been to effect an electrical connection.

Claims 14, 15, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okabe.

Regarding claims 14, 15, and 21, Okabe discloses the claimed invention as described above except Okabe does not specifically state that the first wiring film and the second wiring film each extend an (substantially [claim 15]) equal amount along a width direction, the width direction being a direction that is parallel to or substantially parallel to the surface of the first resin film [claims 14, 21]. However, such a modification would only involve a change in size of the wiring films, which is well known



to the ordinarily skilled artisan. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to form the wiring films to have equal widths as is known in the art. The motivation for doing so would have been to properly size the wirings to withstand the required transmission capabilities.

Regarding claim 19, Okabe discloses the claimed invention as described above except Okabe does not specifically state a third wiring film, wherein a bottom face of the third wiring film is embedded into the first resin film while the bottom face of which is disposed in a third opening formed in the first resin film, an electric current flows into the third opening formed in the first resin film [claim 19]. However, this arrangement is precisely the same as the first wiring film disclosed by Okabe as described above.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to include a third wiring film, wherein a bottom face of the third wiring film is embedded into the first resin film while the bottom face of which is disposed in a third opening formed in the first resin film, an electric current flows into the third opening formed in the first resin film in the invention of Okabe. The motivation for doing so would have been to allow for additional simultaneous signal transmission.

***Allowable Subject Matter***

Claims 12 and 13 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: Claim 12 states the limitation "a first bump is arranged in the first opening, the wire of the second flexible wiring board is connected to the first wiring film by the first bump, a second bump is arranged in the second opening, the wire of the second flexible

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wiring board is connected to the second wiring film by the second bump". This limitation, in conjunction with the other claimed features, was neither found to be disclosed in nor suggested by the prior art.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-5 and 7-21 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

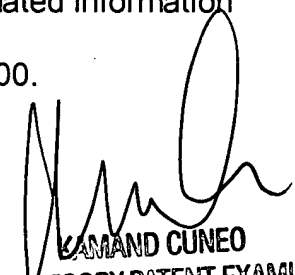
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremy C. Norris whose telephone number is 571-272-1932. The examiner can normally be reached on Monday - Friday, 9:30 am - 5:30 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on 571-272-1957. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JCSN



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